AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the Application. No new matter has been introduced by way of the claim amendments. Current additions to the claims are noted with underlined text. Current deletions from the claims are indicated by text ~~strikethrough~~ or [[double bracketing]]. The status of each claim is indicated in parenthetical expression following the claim number.

WHAT IS CLAIMED IS:

1. – 57. (Canceled)

58. (Currently Amended) A method of making an electronic component, comprising:

(a) providing a self-assembled nanocell comprising:~~,~~

~~wherein the self-assembled nanocell comprises:~~

at least one input lead;

at least one output lead; and

a random nano-network spanning the at least one input lead and the at least one output lead,

wherein the random nano-network comprises:

a plurality of molecular circuit components, and

a plurality of nanoparticles,

wherein the plurality of molecular circuit components interconnect at least a portion of the plurality of nanoparticles to provide electrical continuity ~~nanoparticles have a functionality of electrical connectors thereby aiding a formation of the molecular circuit components into a conductive network~~; and

(b) programming the self-assembled nanocell to a desired state to function as the electronic component, wherein ~~the~~ programming comprises:

~~(b1)~~ configuring the plurality of molecular circuit components by mortal switching,

wherein ~~the~~ configuring comprises applying a voltage across the at least one input lead and the at least one output lead ~~so as~~ to adjust a conductivity-affecting property of at least one of the plurality of molecular circuit components.

59. (Currently Amended) The method according to claim 58~~1~~ wherein the plurality of molecular circuit components is~~are~~ selected from the group consisting of molecular switches, molecular diodes, molecular wires, molecular rectifiers, molecular resistors, molecular transistors, molecular memories and combinations thereof.

60. (Previously Presented) The method according to claim 59 wherein the molecular switches comprise 2',5'-dinitro-4,4'-diphenyleneethynylene-1,4"-benzenedithiol.

61. (Currently Amended) The method according to claim 60 further comprising ~~wherein said providing comprises~~ connecting at least one of the molecular switches to one of the at least one input lead and the at least one output lead.

62. (Currently Amended) The method according to claim 59 wherein the plurality of molecular circuit components comprises molecular resonant tunneling diodes.

63. (Currently Amended) The method according to claim 62 wherein the plurality of molecular circuit components exhibits negative differential resistance.

64. (Currently Amended) The method according to claim 58 wherein the plurality of molecular circuit components comprises ~~include~~ conjugated molecular segments.

65. (Previously Presented) The method according to claim 58 wherein the conductivity-affecting property is selected from the group consisting of charge, conformational state, electronic state, and combinations thereof.

66. (Currently Amended) The method according to claim 58~~1~~ wherein programming ~~step (b)~~ further comprises:

~~(b2)~~ testing a ~~the~~ performance of the nanocell.

67. (Currently Amended) The method according to claim 66 wherein programming ~~step (b)~~

further comprises:

~~(b3)~~ applying a self-adaptive algorithm to reconfigure the plurality of molecular circuit components.

68. (Previously Presented) The method according to claim 67 wherein the self-adaptive algorithm is selected from the group consisting of genetic algorithms, simulated annealing algorithms, go with the winner algorithms, temporal difference learning algorithms, reinforcement learning algorithms, and combinations thereof.

69. (Currently Amended) The method according to claim 67, wherein programming further comprising~~es~~:

repeating the steps of

~~(b2)~~ testing a~~the~~ performance of the nanocell; and

~~(b3)~~ ~~and~~ applying a self-adaptive algorithm to reconfigure the plurality of molecular circuit components,~~.~~

wherein the repeating step is performed until the plurality of molecular circuit components is reconfigured such that the nanocell is set to a desired state ~~until the nanocell functions~~ to function as the electronic component.

70. (Previously Presented) The method according to claim 58 wherein the electronic component comprises a logic unit.

71. (Previously Presented) The method according to claim 70 wherein the logic unit is selected from the group consisting of truth tables supported by the input leads and output leads.

72. (Previously Presented) The method according to claim 71 wherein the logic unit is selected from the group consisting of an AND, an OR, an XOR, a NOR, an NAND, a NOT, an Adder, a Half-Adder, an Inverse Half-Adder, a Multiplexor, a Decoder, and combinations thereof.

73. (Previously Presented) The method according to claim 58 wherein the electronic component comprises a memory unit.

74. (Currently Amended) The method according to claim 58~~1~~ wherein providing further ~~step (a)~~ comprises:

~~(a1)~~ allowing the plurality of nanoparticles to self-assemble into a random array;

~~(a2)~~ allowing the plurality of molecular circuit components to self-assemble into a random molecular interconnect between ~~the~~ at least a portion of the plurality of nanoparticles; and

~~(a3)~~ bonding the plurality of molecular circuit components to the at least a portion of the plurality of nanoparticles with molecular alligator clips.

75. (Previously Presented) The method according to claim 74 wherein the molecular alligator clips are selected from the group consisting of sulfur, oxygen, selenium, phosphorous, isonitrile, pyidine, carboxylate, and thiol moieties.

76. (Previously Presented) The method according to claim 58 wherein the nanocell has a linear dimension between about 1 nm and about 2 μm.